

Title (en)

METHOD AND SYSTEM FOR ADVANCEMENT OF A BOREHOLE USING A HIGH POWER LASER

Title (de)

VERFAHREN UND SYSTEM ZUR ERWEITERUNG EINES BOHRLOCHS MITHILFE EINES HOCHLEISTUNGSLASERS

Title (fr)

PROCEDE ET SYSTEME DE PROGRESSION D'UN TROU DE FORAGE AU MOYEN D'UN LASER DE FORTE PUISSANCE

Publication

EP 2315904 B1 20190206 (EN)

Application

EP 09840554 A 20090819

Priority

- US 2009054295 W 20090819
- US 9038408 P 20080820
- US 15327109 P 20090217
- US 10647208 P 20081017
- US 10273008 P 20081003

Abstract (en)

[origin: US2010044102A1] There is provided a system, apparatus and methods for removal of material for the path of a laser beam during laser drilling of a borehole and for removal of displaced borehole material from the borehole during laser drilling. In particular, there are provided paths, dynamics and parameters of fluid flows, and apparatus for obtaining such, for use in conjunction with a laser bottom hole assembly.

IPC 8 full level

E21B 7/15 (2006.01)

CPC (source: EP US)

E21B 7/14 (2013.01 - EP US); **E21B 7/15** (2013.01 - EP US); **E21B 10/60** (2013.01 - EP US); **E21B 21/103** (2013.01 - EP US); **E21B 29/00** (2013.01 - US); **E21B 43/11** (2013.01 - US)

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

DOCDB simple family (publication)

US 2010044102 A1 20100225; **US 8636085 B2 20140128**; AU 2009340454 A1 20100826; BR PI0918403 A2 20151124; CA 2734492 A1 20100826; CA 2734492 C 20160517; CN 102187046 A 20110914; CN 102187046 B 20150429; EP 2315904 A1 20110504; EP 2315904 A4 20160420; EP 2315904 B1 20190206; JP 2012500350 A 20120105; JP 2015017498 A 20150129; JP 5844868 B2 20160120; MX 2011001908 A 20110620; MX 355677 B 20180425; RU 20111110388 A 20120927; RU 2522016 C2 20140710; US 2010044103 A1 20100225; US 2010044104 A1 20100225; US 2010044105 A1 20100225; US 2010044106 A1 20100225; US 2013175090 A1 20130711; US 2013192893 A1 20130801; US 2013192894 A1 20130801; US 2014060802 A1 20140306; US 2014060930 A1 20140306; US 2015308194 A1 20151029; US 2015322738 A1 20151112; US 2016017661 A1 20160121; US 2016090790 A1 20160331; US 8424617 B2 20130423; US 8511401 B2 20130820; US 8701794 B2 20140422; US 8757292 B2 20140624; US 8820434 B2 20140902; US 8826973 B2 20140909; US 8869914 B2 20141028; US 8936108 B2 20150120; US 8997894 B2 20150407; US 9284783 B1 20160315; US 9512679 B2 20161206; US 9534447 B2 20170103; WO 2010096086 A1 20100826

DOCDB simple family (application)

US 54396809 A 20090819; AU 2009340454 A 20090819; BR PI0918403 A 20090819; CA 2734492 A 20090819; CN 200980141304 A 20090819; EP 09840554 A 20090819; JP 2011523959 A 20090819; JP 2014191026 A 20140919; MX 2011001908 A 20090819; RU 20111110388 A 20090819; US 2009054295 W 20090819; US 201313777650 A 20130226; US 201313800559 A 20130313; US 201313800820 A 20130313; US 201313800879 A 20130313; US 201313800933 A 20130313; US 201313852719 A 20130328; US 201314104395 A 20131212; US 201414330980 A 20140714; US 201414335627 A 20140718; US 54398609 A 20090819; US 54403809 A 20090819; US 54409409 A 20090819; US 54413609 A 20090819